

The Buteo never fed in my presence with the same freedom that the Accipiter did, nor were its actions so free. The latter's boldness and daring manifested themselves in every action.

Syrnium nebulosum.—Lastly I had a juvenile Barred Owl in my possession. In it, as in the others, abundance of food produced the same effects—larger size and more robust organization. The food most preferred was birds and small rodents; frogs and fish were eaten when quite fresh, though the latter were taken only when hungry. Insects, too, were eaten.

Digestion was rapid, requiring about one and a half hours for the digestion and absorption of a pair of Sparrows. Birds were always eaten without pulling a feather. If not too large they were swallowed whole, for the throats of young Owls are quite capacious. The indigestible parts are ejected when digestion is completed.

The Owl never, except once, fed knowingly in my presence (and it was difficult to observe its habits without its knowledge). Its sense of sight is so acute, and its range of vision so extended, that I was compelled to use many devices to deceive the bird and accomplish my purpose of observation without being observed. The food put into its cage was seldom eaten until pressed by hunger, and the bird never ate in a day more than one-third the quantity of food eaten by the Accipiter in the same time.

It could not easily be petted, nor did it acquire a fondness for being handled. Indeed it seemed to remain unaffected by kindness, and to love solitude.

NOTES RELATIVE TO THE SENSE OF SMELL IN THE TURKEY BUZZARD (*CATHARTES* *AURA*).*

BY C. L. HOPKINS.

DURING the recent months there has been a good deal of discussion in several of the scientific and sporting papers regarding the sense by which Buzzards find their food; and while taking

* Read before the Biological Society of Washington, D. C.

a good deal of interest in it myself, I also take it for granted that others have followed the discussion with interest; and so I am prompted to give here some notes of my own of observations made during a residence of something over two years in Southern Florida.

Early in my sojourn there I was told of instances in point by some of the old 'Crackers,' all bearing out the assumption that these birds do find their food by the sense of smell, at times unaided by sight, and I often found opportunity for observing the habits of these birds in this respect.

When I first located in Florida, in the year 1884, the festive and rather racy razor-back descendant of the Guinea hog and a very thin shadow of the past, was quite plenty in the immediate neighborhood of my home.

My place was situated upon the eastern bank of a small lake, about three-fourths of a mile in diameter; beyond this to the southward stretched an expanse of some three miles of meadow, dotted here and there by hummocky islands, which islands, together with a stretch of dense hummock, which began at the southwest side of the lake, and merged at the west into a magnificent piece of palmetto and live oak hummock, known as Cabbage Island, were favorite night roosts and day haunts of large numbers of the Turkey Buzzard.

I have often seen them rise from their roosts in the morning, after drying off their damp plumage, and when the morning breeze had freshened up to a strong rate,—and here let me note that, as far as my observation goes, upon damp, foggy or dewy mornings, these birds never left their roosts till after things were pretty thoroughly dried off, and a strong morning breeze was blowing,—and, ascending by soaring circles high into the air, drift off *across* the wind, till, apparently striking a scent, they would in a body move away *up* the wind to disappear in the distance, or, as in several instances in my knowledge, to locate and settle upon carrion known to me, or within my sight.

I have also seen them drifting along *with* the wind till, striking a scent, they would work *back up* the wind, and settle down to feast. Taking into account the fact that they had drifted some way past the spot at last located, before locating it, it would seem to prove that they had *not seen* it in passing at first, but only took cognizance of it after striking the current of air which carried the scent.

I have, upon two occasions, seen them come into view at a great altitude, and sailing down *into* the wind, pass by, one after another, with a rushing sound and great velocity, until a dozen to twenty or more had come into view, bound for some carrion which was beginning to 'smell to heaven,' carrion which I knew of, and knew to be concealed in dense scrub growth. In one case of a large wild boar killed and left in a dense growth of scrub higher than my head, and in which it was almost impossible to make any headway, and which was a mass of verdure overhead, the Buzzards found the place and were perched all about on the scattering trees; but I saw none down in the brush, which was so dense I almost doubt the possibility of their rising out of it if once they had got in. It would have been a case of wonderfully sharp vision which could have discovered this, unaided by any other sense. A 'razor-back,' killed and dressed in the morning, in a dense growth of palmetto, overtopped by high, dense brush, all of it higher than a man's head, and the offal thrown out of the way, back into the growth, was found by the Buzzards before night. I do not think it was possible for it to have been seen from above.

In the case of offal taken and covered up with care under a pile of muck and weeds, when it was old enough to throw off a strong smell, the Buzzards scented it, but had not noticed or descended to the spot before.

While plowing at one time, I killed a quite large coach-whip snake, and turned a furrow over it, covering it up completely from sight; the next day the Buzzards had found the place and were down tramping about over the spot in their efforts to find and get it out.

Scrap meat and lungs, from dressing meat, were put into my poultry house, which was shut up, with the exception of a small, low opening into the high picket yard about the building; the Buzzards were attracted in a couple of days, and haunted the spot as long as any smell was left; this occurred a number of times.

One morning I shot and killed a skunk upon the bank of the lake just in front of my house. With a hoe, I pulled it out from the brush and roots, dug a hole and buried it, covering it completely. Going to the house I awaited developments; the wind was then in the northeast; in less than a half hour there were

over forty Buzzards collected there on neighboring trees and the ground, all having come from the southwest, off over the meadow, appearing in sight and coming straight *up the wind*. The birds unearthed the carcass and held a great war-dance and pow-wow over it. At another time, in the pine timber along the north shore of my lake, I drove another skunk into a hole, by clubbing, and stopped the hole up with sticks; in a short time there were several Buzzards investigating the cause of the outbreak, from the trees about the spot.

A box which had been leaning up by the side of my poultry house was blown down, or tipped down by hens flying upon it, and a chicken crushed under it, of which I knew nothing; but noticing the Buzzards sitting about the place on the trees and fence, I wondered what attracted them there, and soon after, upon moving the box, I found the dead fowl beneath. There was no other carrion present, to my knowledge, at the time.

These facts, while all showing conclusively to my mind that Buzzards do find the location of at least some of their food supply by means of a sense of smell as keen as that of a fox, yet it does not preclude the possibility or the probability that they are often guided or aided in location by a sight as keen as the sense of smell seems to be.

NOTES ON THE BIRDS OF FORT KLAMATH, OREGON.

BY DR. J. C. MERRILL, U. S. A.

With remarks on certain species by William Brewster.

[Continued from p. 146.]

Ceryle alcyon. Common in summer, several remaining throughout the winter.

Dryobates villosus harrisii. This was the most common species of Woodpecker during autumn and winter, and at that season more often found among aspens than were the others. This is the only place in the West where I have found *harrisii* to be more abundant than *gairdneri*. About the middle of March and later, as the breeding season approached,